Center Innovation Fund: SSC CIF

Investigation into a Novel Propellant Delivery System for 1000lbf Class Ultra-Low-Cost Reusable CubeSat Boost Engine

Completed Technology Project (2016 - 2017)

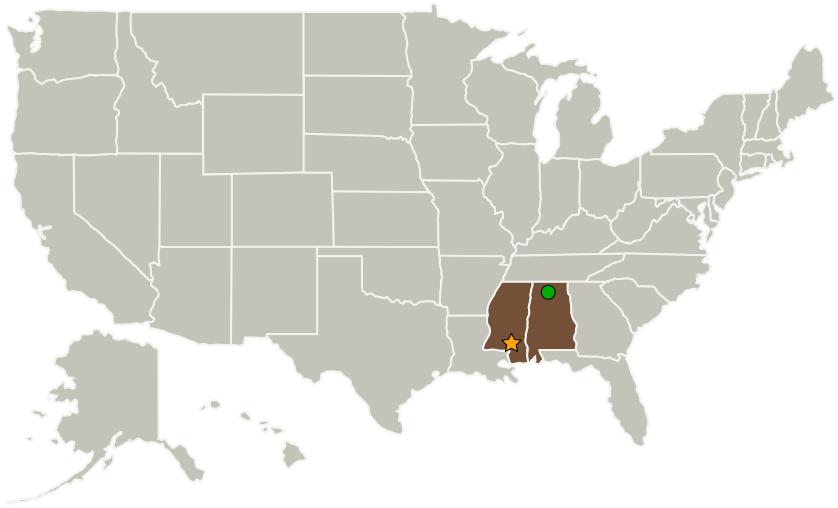
Project Introduction

Launch services for cube-satellites is a new and rapidly growing market with dozens of commercial players and millions of dollars in government investment in technology development over the past few years. While most cube-satellites are currently delivered to orbit as secondary payloads on large rockets, the need exists for dedicated launchers which can deliver a payload to a precise orbit on-demand. The innovation being developed by this project is a propellant delivery system for 1,000-lbf thrust class liquid rocket engines based on a high performance-to-weight internal combustion piston engine using LOX/CH4 propellants.

Anticipated Benefits

This propellant delivery system has the potential to provide better performance-to-weight, performance-to-price, reliability, and reusability than most presently existing technologies.

Primary U.S. Work Locations and Key Partners



CubeSats such as Montana State's Explorer 1 can benefit from propulsion for guidence and control.

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Organizations Performing Work	Role	Type	Location
★Stennis Space Center(SSC)	Lead Organization	NASA Center	Stennis Space Center, Mississippi
●Marshall Space Flight Center(MSFC)	Supporting Organization	NASA Center	Huntsville, Alabama

Primary U.S. Work Locations	
Alabama	Mississippi

Images

Project Image
CubeSats such as Montana State's Explorer 1 can benefit from propulsion for guidence and control.
(https://techport.nasa.gov/image/35798)

Organizational Responsibility

Responsible Mission Directorate:
Space Technology Mission Directorate (STMD)

Lead Center / Facility:
Stennis Space Center (SSC)

Responsible Program:
Center Innovation Fund: SSC CIF

Project Management

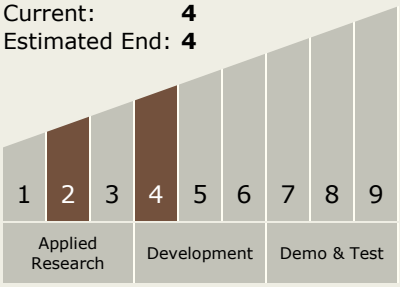
Program Director:
Michael R Lapointe

Program Manager:
Ramona E Travis

Principal Investigator:
Jody L Woods

Technology Maturity (TRL)

Start: **2**
Current: **4**
Estimated End: **4**



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Technology Areas

Primary:

- TX01 Propulsion Systems
  - TX01.1 Chemical Space Propulsion
    - TX01.1.2 Earth Storable

Target Destination

Earth